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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TITLE: WRENCH EXTENSION TOOL

INVENTOR: RON DAY

Day-Wrench

1 FIELD OF INVENTION

2 Applicant s invention relates to hand tools and devices
3 for increasing torque applicable by such tools.

4 BACKGROUND INFORMATION

5 It is common in any type of construction, farming, home
6 improvement, or similar type project to come across a bolt
7 that must be removed. In the process of trying to unscrew a
8 bolt, it is typical to encounter many problems including,
9 corrosion of materials, mineral deposits on the bolt,
10 contraction of materials around the bolt, a bolt that someone
11 stronger or using an impact wrench had tightened, a bolt in an
12 inconvenient location, or other objects have been built or
13 placed around the bolt. All these problems make the bolt
14 extremely hard to loosen, if it can even be turned at all, and
15 a significant amount of force must be exerted. In many if not
16 most cases, a person does not have the physical ability to
17 apply the required amount of force.

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19 Different projects, such as the attachment of separate
20 materials or the creation of fluid containment, require the
21 addition of new bolts. If a single bolt is not tightened
22 enough when attaching separate pieces together, movement may
23 occur between the pieces, weakening the entire structure and

1 possibly causing collapse and/or injury. In the case of fluid
2 containment, if the bolts are not significantly tight the
3 fluids will escape containment. Depending on the size of
4 containment and the type of fluid, the fluid may flood the
5 area, erode the equipment outside of containment, cause a
6 hazardous environmental release, or significant injury to a
7 person. In order to tighten the bolt to avoid these and other
8 possible catastrophes requires an extensive amount of force,
9 which in many cases a person is not physical able to apply.

10 These and other problems associated with removal of an
11 existing bolt or the tightening of a bolt to the necessary
12 point will delay the project until either a different
13 instrument is located or bought, suitable mechanized equipment
14 is obtained, or a stronger person is found or hired. This can
15 be a time consuming, frustrating, and expensive process
16 especially for the lone worker who is miles away from another
17 person or store, a person of lesser strength who must hire
18 someone, or a person who is on a tight budget.

19 It is common knowledge in the area of physics that
20 increasing the length of the levering arm will increase the
21 amount of torque on an object without having to increase the
22 amount of force applied. Put in the common terms of a wrench
23 and a bolt, the longer the handle of the wrench, the easier it

1 will be for the user of the wrench to tighten or loosen the
2 bolt applying the same amount of force.

3 Currently there are several ways to increase the
4 effective length of a wrench handle, including the use of
5 metal pipes and specialized wrenches. The problem in using
6 pipes to increase the length of the wrench handle is that
7 pipes, being cylindrical, do not snugly fit onto the wrench
8 handle, causing the pipe to slip around and perhaps even slip
9 off the wrench handle. This may cause serious injury to the
10 user. In addition, the use of a pipe isolates the force
11 applied to the wrench handle to one particular spot on the
12 wrench handle, which increases the likelihood of the wrench
13 breaking, causing greater delay and increasing the cost of the
14 project.

15 The specialized wrenches designed with a longer handles
16 often only fit particular large sized bolts and are expensive,
17 so that the typical user either could not or would not buy one
18 for use in one specific project. Even if the user did buy the
19 wrench, it would be doubtful that it would be an aid in other
20 future projects, and the process of finding another wrench
21 would have to be repeated.

22 In view of the foregoing, it would serve anyone involved
23 in construction, farming, home improvement, or similar

1 activity to provide an inexpensive and efficient means to
2 extend the handles of a wide range of wrenches.
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4 SUMMARY OF INVENTION

5 It is an object of the present invention to provide
6 increased leverage to a wrench to increase torque on the
7 object aiding in the ability for the user to turn a bolt.

8 In satisfaction of these and related objectives,
9 Applicant's present invention provides a wrench extension that
10 allows for users to turn an otherwise stationary bolt,
11 applying the same amount of force to the extension as on the
12 wrench.
13

14 BRIEF DESCRIPTION OF THE DRAWINGS

15 FIG. 1 is an elevational front view of the Applicant s
16 wrench extension.

17 FIG. 2 is a cross-sectional view of the Applicant s wrench
18 extension s wrench holder and faceplate.

19 FIG. 3 is a three-dimensional view of the front of the
20 Applications wrench extension faceplate and wrench holders.
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1 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

2 Referring to FIG. 1, the apparatus of Applicant's invention
3 is identified by the reference numeral 10, shown encompassing a
4 typical wrench as detailed by dashed lines. The wrench extension
5 10 includes handle 5 and faceplate 20. The preferred embodiment
6 of wrench extension 10 is made completely of metal. The strength
7 of metal allows for a significant amount of force to be applied
8 on the wrench extension without fear of breaking each individual
9 piece of the apparatus. A metal apparatus also allows the
10 individual pieces to be welded together, increasing the strength
11 of the entire apparatus and decreasing the chance of the
12 apparatus breaking under a significant amount of force.

13 Handle 5 has a front end 7 and rear end 2. Handle 5 is
14 attached to faceplate 20 at front end 7. The preferred
15 embodiment of handle 5 is cylindrical and is at a length that is
16 significantly longer than that of a typical wrench; therefore,
17 wrench extension 10 effectively increases the length of the
18 wrench handle.

19 The preferred embodiment of faceplate 20 is rectangular,
20 connecting to the handle at the handle end 30 on its
21 longitudinal axis, the opposing end of faceplate is faceplate
22 terminal 25. Faceplate 20 is attached to first wrench holder 15
23 and second wrench holder 17. First wrench holder 15 is attached

1 to faceplate 20 closer to faceplate terminal 25. The distance
2 from the terminal of faceplate 25 should be such to allow the
3 wrench extension to stop at a point that is close to the head of
4 the wrench.

5 Second wrench holder 16 is attached to faceplate 20 at a
6 distance closer to handle end 30. The preferred embodiment of
7 wrench extension 10 has first wrench holder 15 and second wrench
8 holder 16 set at a distance from each other to allow the
9 apparatus to connect with the wrench handle at two optimum
10 points, one point being closer to the head of the wrench and one
11 point being closer to the end of the wrench. This allows for the
12 force on a wrench handle to be distributed substantially
13 equally.

14 Referring to FIG. 2, first wrench holder 15 has spine 35
15 and cusp 40 and is substantially L shaped. Cusp 40 extends
16 over the faceplate front 22. Second wrench holder 16 is
17 substantially similar to first wrench holder 16.

18 Referring to FIG. 3, first wrench holder 15 is attached to
19 the faceplate bottom 50 along the longitudinal axis. Second
20 wrench holder 16 is attached to the opposing side or faceplate
21 top 55 along the longitudinal axis. (Note that the top ,
22 bottom , front and back are included for descriptive
23 purposes only and do not relate to the specific orientation of

1 the apparatus.) The preferred embodiment of spine 35 is that the
2 depth of spine 35 is greater than the width of a wrench handle.
3 The preferred embodiment of cusp 40 is a length that allows for
4 maximum coverage of the wrench handle. The preferred embodiment
5 of spine 25 and cusp 40 allows wrench extension 10 to slide onto
6 the handle of a wrench, while first wrench holder 15 and second
7 wrench holder 16 maintain a reasonably tight fit around the
8 wrench handle, avoiding excess of movement of the wrench handle.